

API Specification

# 16D

Second Edition, July 2004

Specification for Control Systems for Drilling Well Control  
 Equipment and Control Systems for Diverter Equipment

## Annexes A, B

**API Monogram<sup>®</sup> Required**

☐ Yes ☐ No

## Annex A

(Informative)

**Table A.1—Control System —Control System Operating and Interface Requirements for Surface Bop Stack**

Regulatory Agency Compliance Required		Yes _____	No _____
Regulatory Agency(s) MMS _____	HSE _____	NPD _____	Other _____
BOP Stack — Size _____		Working Pressure _____	
BOP Stack —Rams _____	Annular BOP(s) _____	Valves _____	
—Valves Failsafe Open _____		Failsafe Close _____	
Annular BOP _____	Quantity _____	Size _____	Working Pressure _____
Manufacturer _____			Model _____
Ram BOPs _____	Quantity _____	Size _____	Working Pressure _____
Ram Locks Yes <input type="checkbox"/>	No <input type="checkbox"/>		Type _____
Pipe Rams Closing Ratio _____			
Shear Ram Operating Pressure _____	Size _____	Type _____	Grade _____
Shear Rams Closing Ratio* _____	Pipe to Shear _____	Shearing Pressure _____	
Manufacturer _____		Model _____	
Choke Valve(s) _____	Quantity _____	Size _____	Working Pressure _____
Operating Pressure (Against Working Pressure) _____	Open _____	Close _____	
Manufacturer _____		Model _____	
Kill Valve(s) _____	Quantity _____	Size _____	Working Pressure _____
Operating Pressure (Against Working Pressure) _____	Open _____	Close _____	
Manufacturer _____		Model _____	
Hydraulic Pump Systems			
Electric Powered	Quantity _____	Size _____	Working Pressure _____
Electricity Available: V _____	A _____	Type _____	Grade _____
Air Powered	Quantity _____	Size _____	Working Pressure _____
Air Pressure _____	CFM _____		
Remote Panel(s) _____	Quantity _____	Area Classification _____	
Location of Choke Connection(s) (to Show on Panel Graphic) _____			
Location of Kill Connection(s) (to Show on Panel Graphic) _____			

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Table A-2—Surface Stack Hydraulic Control System Control Function List (Select as Applicable)

No.	Control Function			Closing Ratio	2 Pos.	
					Gallons Required	
1	Annular BOP	Open	Close	N/A	_____	_____
2	Upper Pipe Rams	Open	Close	_____	_____	_____
3	Middle Pipe Rams	Open	Close	_____	_____	_____
4	Lower Pipe Rams	Open	Close	_____	_____	_____
5	Choke Valve	Open	Close	N/A	_____	_____
6	Kill Valve	Open	Close	N/A	_____	_____

Table A-3—Diverter System Hydraulic Control System Control Function List (Select as Applicable)

Diverter Model _____					
No.	Control Function		Gallons Required	2 Pos.	
				Max	Min
1	Diverter Unit	Open	_____	_____	_____
		Close	_____	_____	_____
2	Port/Starboard Selector	Port	_____	_____	_____
		Starboard	_____	_____	_____
3	Vent Valve	Open	_____	_____	_____
		Close	_____	_____	_____
4	Port Overboard Valve	Open	_____	_____	_____
		Close	_____	_____	_____
5	Starboard Overboard Valve	Open	_____	_____	_____
		Close	_____	_____	_____
6	Flowline Valve	Open	_____	_____	_____
		Close	_____	_____	_____
7	Diverter Lockdown Dogs	Latch	_____	_____	_____
		Unlatch	_____	_____	_____
8	Insert Packer Lockdown Dogs	Latch	_____	_____	_____
		Unlatch	_____	_____	_____
9	Flowline Seal	Energize	_____	_____	_____
		Vent	_____	_____	_____
10	Filling Line Valve	Open	_____	_____	_____
		Close	_____	_____	_____
11	Overshot Packer Seal	Energize	_____	_____	_____
		Vent	_____	_____	_____
12	Other (Specify)	(Specify)	_____	_____	_____
		(Specify)	_____	_____	_____

Note which functions (if any) are to be interconnected for sequencing.

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## Annex B

**Table B-1—Control Operating and Interface Requirements Subsea BOP Stack**

Regulatory Agency Compliance Required		Yes _____	No _____
Regulatory Agency(s) MMS _____	HSE _____	NPD _____	Other _____
Control System Type _____	Hydraulic _____	EH _____	MUX _____
Maximum Water Depth _____	Hydraulic Control Pressure _____		
BOP Stack—Size _____	Working Pressure _____		
BOP Stack—Ram _____	Annular BOP(s) _____	Failsafe Valves _____	
Valves are: _____ FSO _____	FSC _____	FAO _____	FAC _____
Subsea Umbilicals			
Manufacturer _____	Model _____	Length _____	
Subsea Hydraulic Supply Lines			
Umbilical Hose	Quantity & Length _____	Size _____	Working Pressure _____
Supply Hose	Quantity & Length _____	Size _____	Working Pressure _____
Hydraulic Conduit	Quantity & Length _____	Size _____	Working Pressure _____
Annular BOP(s) _____	Quantity _____	Size _____	Working Pressure _____
Manufacturer _____	Model _____		
Shear Ram BOP(s)	Quantity _____	Size _____	Working Pressure _____
Shear Ram Locks	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Type _____
Closing Ratio		Pipe Size and Grade	Shear Pressure for Specified Pipe (Surface)
Ram BOPS	Quantity _____	Size _____	Working Pressure _____
Ram Locks	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Type _____
Closing Ratio			
Manufacturer	Model _____		
Riser Connector		Size _____	Working Pressure _____
Manufacturer	Model _____		
Wellhead Connector		Size _____	Working Pressure _____
Manufacturer	Model _____		
Choke Valve(s)	Quantity _____	Size _____	Working Pressure _____
Manufacturer	Model _____		
Choke Outlet Location(s)			
Kill Valve(s)	Quantity _____	Size _____	Working Pressure _____
Manufacturer	Model _____		
Kill Outlet Location(s)			
LMRP Accumulators			
Quantity _____	Size _____	Working Pressure _____	Banks _____
BOP Accumulators			
Quantity _____	Size _____	Working Pressure _____	Banks _____

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**Table B-1 (continued)—Control Operating and Interface Requirements Subsea BOP Stack**

Hydraulic Pump Systems

Electric Powered      Quantity \_\_\_\_\_      Size \_\_\_\_\_      Working Pressure \_\_\_\_\_  
 Electricity Available:      V \_\_\_\_\_      A \_\_\_\_\_      Hz \_\_\_\_\_  
    Phase \_\_\_\_\_

Air Powered      Quantity \_\_\_\_\_      Size \_\_\_\_\_      Working Pressure \_\_\_\_\_  
                                  Air Pressure Required \_\_\_\_\_  
                                  Air Volume Required \_\_\_\_\_

Remote Panels

Hazardous Location      Quantity \_\_\_\_\_      Area Classification \_\_\_\_\_  
 Safe Location      Quantity \_\_\_\_\_      Area Classification \_\_\_\_\_

**Table B-2—Subsea Stack Hydraulic Control System Control Function List (Select as Applicable)**

No.	Control Function			Gallons	Control Pressure	Pos.
1	Pod Select	Blue	Yellow	_____	_____	3
2	Upper Annular BOP	Open	Close	_____	_____	3
3	Lower Annular BOP	Open	Close	_____	_____	3
4	Riser Connector	Unlock	Lock	_____	_____	2
5	Riser Connector Secondary	Unlock	Vent	_____	_____	3
6	Upper Pipe Rams	Open	Close	_____	_____	3
7	Shear Rams	Open	Close	_____	_____	3
8	High Pressure Shear Rams	Close	Vent	_____	_____	1
9	Upper Pipe Rams	Open	Close	_____	_____	3
10	Middle Pipe Rams	Open	Close	_____	_____	3
11	Lower Pipe Rams	Open	Close	_____	_____	3
12	Wellhead Connector	Unlock	Lock	_____	_____	3
13	Wellhead Connector Secondary	Unlock	Vent	_____	_____	2
14	Pod Latch	Latch	Unlatch	_____	_____	2
15	Blue Hydraulic Stabs	Extend	Retract	_____	_____	3
16	Yellow Hydraulic Stabs	Extend	Retract	_____	_____	3
17	Choke & Kill Stabs	Extend	Retract	_____	_____	3
18	Annular BOP Outer Bleed	Open	Close	_____	_____	2
19	Annular BOP Inner Bleed	Open	Close	_____	_____	2
20	LMRP Choke & Kill Test Valve	Close	Open	_____	_____	2
21	Upper Outer Choke	Open	Close	_____	_____	2
22	Upper Inner Choke	Open	Close	_____	_____	2
23	Lower Outer Choke	Open	Close	_____	_____	2
24	Lower Inner Choke	Open	Close	_____	_____	2
25	Upper Outer Kill	Open	Close	_____	_____	2
26	Upper Inner Kill	Open	Close	_____	_____	2
27	Lower Outer Kill	Open	Close	_____	_____	2
28	Lower Inner Kill	Open	Close	_____	_____	2
29	Shear Rams Locks	Lock	Unlock	_____	_____	2
30	Upper Rams Locks	Lock	Unlock	_____	_____	2
31	Middle Rams Wedgelocks	Lock	Unlock	_____	_____	2
32	Middle Rams Wedgelocks	Lock	Unlock	_____	_____	2

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No.	Control Function			Gallons	Control Pressure	Pos.
33	Lower Rams Locks	Lock	Unlock	_____	_____	2
34	Blue Supply Pilot Check	Vent	Check	_____	_____	2
35	Yellow Supply Pilot Check	Vent	Check	_____	_____	2
36	LMRP Accum Isolator	Open	Close	_____	_____	2
	LMRP Accum Dump	Open	Close	_____	_____	2
37	Lower Stack Accum Isolator	Open	Close	_____	_____	2
	Lower Stack Accum Dump	Open	Close	_____	_____	2
38	LMRP Failsafe Supply	Open	Close	_____	_____	2
39	Lower Stack Failsafe Supply	Open	Close	_____	_____	2
40	Acoustic Accum Isolator	Open	Close	_____	_____	2
	Acoustic Accum Dump	Open	Close	_____	_____	2
41	Subsea Manifold Regulator	Incr	Decr	_____	_____	2
42	Failsafe Assist Regulator	Incr	Decr	_____	_____	2
43	Upper Annular BOP Regulator	Incr	Decr	_____	_____	2
44	Lower Annular BOP Regulator	Incr	Decr	_____	_____	2

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### HOSE REEL “LIVE” FUNCTIONS

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_

### ACOUSTIC FUNCTIONS

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

### ROV FUNCTIONS

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_

Table B-3—Subsea Stack Hydraulic Control System Control Readback Function List (Select as Applicable)

No.	Readback Function	Required
1	Surface Accumulator Supply Pressure	_____
2	Surface Pilot Supply Pressure	_____
3	Rig Air Supply Pressure	_____
4	Subsea manifold Regulator Pilot Pressure	_____
5	Subsea Manifold Regulated Pressure	_____
6	Failsafe Assist Regulator Pilot Pressure	_____
7	Failsafe Assist Regulated Pressure	_____
8	Upper Annular BOP Regulator Pilot Pressure	_____
9	Upper Annular BOP Regulated Pressure	_____
10	Lower Annular BOP Regulator Pilot Pressure	_____
11	Lower Annular BOP Regulated Pressure	_____
12	Other (Specify)	_____

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Table B-4—Subsea Diverter Hydraulic Control System Control Function List (Select as Applicable)

No.	Control Function	2 Pos.	
1	Diverter Unit	Open	Close
2	Flow Selector	Port	Starboard
3	Diverter Lockdown	Latch	Unlatch
4	Vent Valve	Open	Close
5	Port Overboard Valve	Open	Close
6	Starboard Overboard Valve	Open	Close
7	Flowline Valve	Open	Close
8	Insert Packer Lockdown Dogs	Latch	Unlatch
9	Flowline Seal	Energize	Vent
10	Filling Line Valve	Open	Close
11	Ball Joint Pressure		Range
12	Overshot Packer	Energize	Vent
13	Trip Tank	Open	Close
14	Support Ring	Open	Close
15	Other (Specify)		

Note which functions (if any) are to be interconnected for sequencing.